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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/659,944

09/12/2003

Daniel McCarrick

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08/02/2006

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EXAMINER

AURORA, REENA

ART UNIT

PAPER NUMBER

2862

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,944

Applicant(s)

MCCARRICK ET AL.

Examiner

Reena Aurora

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 38 is/are pending in the application.
- 4a) Of the above claim(s) 17 - 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 16 and 37 - 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This communication is in response to amendment received on 05/08/06.

Claims 1 – 16 and 37 - 38 are presented for examination.

Applicant has added new claim 38.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13 – 15 and 37 - 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babin et al. (5,825,176) in view of Tokunaga et al. (7,019,516).

As to claims 13 - 15, Babin discloses an apparatus for sensing the rotational speed of a inner member comprising a target component (304, fig. 15) mounted for rotation; a sensor (332); a second component supported for rotation between the target component (304) and the sensor (332) (made of low carbon steel, 308) that continuously covers a path between the sensor (332) the target component (304) and formed of material having a relatively low magnetic permeability (col. 4, lines 27 – 29); and the sensor (332) including a coil (334) and a magnet generating a flux path extending through said portion of the second component to said target component, the

flux path having a magnetic reluctance that varies with rotation of the target component (304), the coil (334) carrying a signal generated in response to changes in said reluctance, the signal having a frequency indicative of the rotational speed of the target component (col. 4, lines 23 – 29 and col. 4, line 65 – col. 5, line 17). Babin fails to show that the second component continuously covers a path between the sensor and the target component and includes no source of magnet flux. Tokunaga discloses a magnetic sensor unit wherein that the target (2, fig. 1B) is continually hidden from view of the sensor (5) by the second component (6). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Babin in view of the teachings of Tokunaga such that providing a continuous second component to hide the sensor from the view of the target would provide more accurate measurements from the sensor such that the sensor is not being influenced by the external environment.

As to claims 37 and 38, Babin discloses an apparatus and method for sensing the rotational speed of a inner member (304) comprising the steps of forming the second component of material having relatively low magnetic permeability (col. 4, lines 27 - 29; locating the second component (308) between a sensor (332) and the target component (304); generating a magnetic flux path that passes from the sensor (332) through the second component (308) and extends to the target component, rotation of the target component (308) causing changes in a characteristic of the magnetic flux path; rotating the second component between the sensor and the target component ;generating a position signal that varies in response to changes in said characteristic;

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and determining a rotational speed of the target component based on values of the signal over time without reference to another signal (col. 4, lines 23 – 29 and col. 4, line 65 – col. 5, line 17). Babin fails to show that the second component continuously covers a path between the sensor and the target component and includes no source of magnet flux. Tokunaga discloses a magnetic sensor unit wherein that the target (2, fig. 1B) is continually hidden from view of the sensor (5) by the second component (6). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Babin in view of the teachings of Tokunaga such that providing a continuous second component to hide the sensor from the view of the target would provide more accurate measurements from the sensor such that the sensor is not being influenced by the external environment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 3 and 6 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babin et al. (5,825,176) in view of Tokunaga et al. (7,019,516).

As to claims 1 - 3, Babin et al. (hereinafter Babin) discloses an apparatus for sensing the rotational speed of a inner member comprising a target component (304, fig. 15) supported for rotation; a sensor (332) facing the target (304); a second

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component (made of low carbon steel) (308) interposed between the sensor (332) and target component (304), supported for rotation between the target (304) and the sensor (332); and being formed of material having relative magnetic permeability equal to or less than 25.0 (col. 4, lines 27 - 29); and a sensor (332) including a coil and a magnet generating a flux path extending through the portion of the second component to the target component, the flux path having a reluctance that varies with rotation of the target component, the coil carrying a signal generated in response to changes in said reluctance, the signal having a frequency representing the rotational speed of the target component (col. 4, lines 23 – 29 and col. 4, line 65 – col. 5, line 17). Babin fails to explicitly disclose that the target is continually hidden from view of the sensor by the second component. Tokunaga et al. (hereinafter Tokunaga) discloses a magnetic sensor unit wherein that the target (2, fig. 1B) is continually hidden from view of the sensor (5) by the second component (6). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Babin in view of the teachings of Tokunaga such that providing a continuous second component to hide the sensor from the view of the target would provide more accurate measurements from the sensor such that the sensor is not being influenced by the external environment.

As to claim 16, Babin discloses an apparatus for sensing the rotational speed of a inner member comprising a second component (308) blocking a path to the target component from a magnetic flux source (304), supported for rotation between the target (304) component and the sensor (332) and being formed of material having relative

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magnetic permeability equal to or less than 25.0 (col. 4, lines 27 - 29); and the magnetic flux source (332) generating a magnetic flux path within which the target component (304) and second component (308) are located, rotation of the target component (304) causing changes in a characteristic of the magnetic flux path; a detector (332) generating a position signal that varies in response to changes in said characteristic; and a controller for determining a rotational speed of the target component based on values of said position signal over time without reference to another signal (col. 4, lines 23 – 29 and col. 4, line 65 – col. 5, line 17). Babin does not explicitly disclose that the second component is continuously blocking the target and the second component. Tokunaga discloses a magnetic sensor unit wherein that the target (2, fig. 1B) is continually hidden from view of the sensor (5) by the second component (6). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Babin in view of the teachings of Tokunaga such that providing a continuous second component to hide the sensor from the view of the target would provide more accurate measurements from the sensor such that the sensor is not being influenced by the external environment.

As to claims 6 and 7, Babin discloses that the target component (304) includes an outer surface facing the sensor and having a plurality of mutually spaced surface variations (308, 328) on the outer surface.

As to claim 8, Babin discloses that the magnet generating a magnetic field and the sensor further comprises a ferrite core (340, 326), and the coil (334) is wound around the core.

As to claims 9 – 12, Babin and Tokunaga fail to disclose that the stainless is formed by stamping. However, it is well known in the art to stamp stainless at a desired temperature to exhibit desired resiliency.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Babin et al. (5,825,176) in view of Tokunaga et al. (7,019,516) as applied to claim 1 above, and further in view of Garshelis (6,260,423).

As to claim 4, Babin and Tokunaga fail to disclose that the material of the second component has a concentration of martensite that is less than thirty percent. Garshelis discloses a magnetoelastic torque sensor wherein Garshelis further discloses that martensite has permeability in the range from 10 to 100 (col. 25, lines 28 - 31). Therefore, the lower the concentration of martensite the lower the permeability of the material. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Babin in view of Tokunaga and further in view of the teachings of Garshelis such that providing lower concentration of martensite in second component would result in decreased permeability of the second component.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Babin et al. (5,825,176) in view of Tokunaga et al. (7,019,516) as applied to claim 1 above, and further in view of Hansen (6,528,989).

As to claim 5, Babin, and Tokunaga fail to disclose that the portion is a member of the group consisting of aluminum, titanium and stainless steel. Hansan discloses a magnetic tracker wherein Hansan further discloses that aluminum, titanium and

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stainless steel (col. 25, lines 28 - 31). Therefore, the lower the concentration of martensite the lower the permeability of the material. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Babin in view of Tokunaga and further in view of the teachings of Hansan such that providing the portion is a member of the group consisting of aluminum, titanium and stainless steel having low permeability would result in overall decreased permeability of the second component.

Response to Arguments

Applicant's arguments with respect to claims 1 – 16 and 37 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reena Aurora whose telephone number is 571-272-2263. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, E. Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Reena Aurora